REMARKS

The Examiner is thanked for the performance of a thorough search.

I. AMENDMENTS TO THE SPECIFICATION

The specification has been amended to provide the patent numbers and the patent issue dates of the applications referenced in page 6. No new matter has been introduced by this amendment.

II. STATUS OF CLAIMS

Claims 1-15 have been canceled in order to focus the present application and not for reasons related to the prior art. Claims 16 and 29 have been amended. Claims 40-49 have been added. Hence, Claims 16, 18-26, 28-30, and 32-49 are currently pending in the application.

III. REJECTIONS BASED ON THE CITED ART

Claims 16, 18-20, 28-30, and 32-33 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Duret et al., U.S. Patent No. 6,704,313 ("DURET") in view of Varghese et al., U.S. Patent No. 6,011,795 ("VARGHESE"). Claims 21, 22, 34, and 35 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over DURET in view of VARGHESE, and further in view of Chiu et al., U.S. Patent No. 6,385,170 ("CHIU"). Claims 23-24, 26, 36-37, and 39 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over DURET in view of VARGHESE, and further in view of Onishi et al., U.S. Patent No. 5,434,863 ("ONISHI"). Claims 25 and 38 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over DURET in view of VARGHESE, further in

view of ONISHI, and further in view of CHIU. The rejections are respectfully traversed herein and the application is placed in condition for allowance by the within amendments.

A. DURET SHOULD BE REMOVED AS A REFERENCE IN VIEW OF THE INVENTOR'S DECLARATION UNDER 37 C.F.R. § 1.131

Attached to this Reply are (1) a Declaration under 37 C.F.R. § 1.131 executed by David R. Cheriton, and (2) a supporting redacted technical document entitled "Access Control List Processing with Mtrie+."

All the claim rejections rely at least in part on DURET. The filing date of DURET, which is January 28, 2000, is less than one year prior to the filing of the present Application, which is September 5, 2000, and therefore DURET is not a statutory bar. DURET claims priority to a French patent application filed on February 12, 1999, but the earliest effective date of DURET as a reference under 35 U.S.C. § 102(e) is January 28, 2000, because the French filing date is before November 29, 2000, and the French application was not a filing under the Patent Cooperation Treaty (PCT). *See* MPEP § 706.02(a)(II)(B).

David R. Cheriton is the inventor named in this application. Cheriton Decl. ¶1. The inventor's declaration establishes that, long prior to the effective date of DURET as a reference, a working computer program existed embodying subject matter within the scope of the independent claims. Cheriton Decl., ¶¶3, 5, 6. Cheriton conceived of the invention, and a student intern created an implementation. Cheriton Decl., ¶4. The averments of the inventor are corroborated by a technical document, dated long prior to the effective date of DURET, that describes the program. *Id.* at ¶6, Exhibit 1. The declaration and Exhibit 1 establish that the inventor actually implemented an embodiment of the claimed invention corresponding to each of the independent claims. *Id.* In particular, Exhibit 1, page 36, Table-5, compares the

performance of the embodiment, which uses Mtrie+ to route and filter packets, against devices and network elements that use other methods for routing and/or filtering packets.

The following table specifies, for each claim presently in the case, sections of Exhibit 1 that establish a reduction to practice of that claim. The representations in the table are made for the sole purposes of complying with MPEP § 715.07(I) and establishing facts that show reduction to practice of each claim and not to amend or express an interpretation of any claim. Thus, the representations in the following table do not limit the scope of any claim.

Claim	**Page and Section of Cheriton Declaration and/or Exhibit 1**
16. A method for routing or switching data packets, ~~including~~comprising the computer-implemented steps of: receiving a data packet at an input interface on a router or switch; looking up information in the header of said data packet in an expanded M-trie data structure, wherein said expanded M-trie data structure is organized as a multi-level tree including a root node, inferior nodes, and terminal nodes, wherein each node includes an address and an opcode; and terminating said ~~lookup~~step of looking up information; ~~and~~ ~~routing said data packet at one or more output interfaces on said router or said switch~~.	**At least in:** Declaration, ¶6; Exhibit 1, page 12, Section 3.1.1; Declaration, ¶6; Exhibit 1, page 15, Figure-11; Declaration, ¶6; Exhibit 1, page 16, Section 3.2.1, Figure-12; Declaration, ¶6; Exhibit 1, page 14, numbered paragraphs 4 and 5.
18. A method as in claim 16, wherein said opcode describes an operation to be performed that is based upon data included in a packet header, so as to facilitate a lookup of said packet header.	**At least in:** Exhibit 1, page 16, Section 3.2.1; page 17, Table-1.
19. A method as in claim 16, wherein said address includes the address of a node in said expanded M-trie data structure that is to be traversed.	**At least in:** Exhibit 1, page 13, Section 3.1.4; page 16, Section 3.2.1; page 17, Table-1.
20. A method as in claim 16, wherein said expanded M-trie data structure includes a set of access control parameters.	**At least in:** Exhibit 1, page 12, Section 3.1.1 ("The Mtrie+ includes instructions which refer to operations that demux on protocol fields,... ."); Section 3.1.2 (describes support for QoS);

	Figure-9 (describes the protocol fields which includes ToS).
21. A method as in claim 16, wherein said expanded M-trie data structure includes a set of Quality of Service (QoS) parameters.	**At least in:** Exhibit 1, page 12, Section 3.1.1 ("The Mtrie+ includes instructions which refer to operations that demux on protocol fields,... ."); Section 3.1.2 (describes support for QoS).
22. A method as in claim 16, wherein said expanded M-trie data structure includes a set of Class of Service (CoS) parameters.	**At least in:** Exhibit 1, page 12, Section 3.1.1 ("The Mtrie+ includes instructions which refer to operations that demux on protocol fields,... ."); Section 3.1.2 (describes support for QoS); Figure-9 (describes the protocol fields which includes ToS).
23. A method as in claim 16, wherein said nodes include opcodes for demultiplexing, opcodes for matching, and opcodes for hashing.	**At least in:** Exhibit 1, Section 3.2.1 at page 18 (nodes with opcodes for multiplexing, matching, and hashing).
24. A method as in claim 23, wherein said opcodes for demultiplexing include instructions to demultiplex into branches of said expanded M-trie data structure based on contents of a byte of said packet header that is being read.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 18, Sections 3.2.2.1 - 3.2.2.2; page 19, Section 3.2.2.7; page 20, Section 3.2.2.10.
25. A method as in claim 23, wherein said opcodes for matching include instructions to compare the contents of a given byte of the flow label to given node data.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 19, Sections 3.2.2.3 - 3.2.2.4; page 20, Sections 3.2.2.8 – 3.2.2.9.
26. A method as in claim 23, wherein said opcodes for hashing include instructions to hash into different M-trie plus branches based on the contents of a given byte in said packet header.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 19, Sections 3.2.2.5 - 3.2.2.6.
28. An apparatus for routing or switching data packets, comprising a device that performs a method comprising: storing in memory an M-trie data structure, said data structure organized as a multi-level tree having a set of nodes, including a root node, inferior nodes and terminal nodes, wherein each node includes an address and an opcode; receiving a data packet at an input interface on a router or switch, wherein the data packet includes information in at least a header with at least a	**At least in:** Declaration, ¶6; Exhibit 1, page 15, Figure-11; Declaration, ¶6; Exhibit 1, page 16, Section 3.2.1, Figure-12; Declaration, ¶6; Exhibit 1, page 12, Section 3.1.1; Exhibit 1, page 12, Section 3.1.2

field that is used by said M-trie data structure to indicate an action for said device to perform in order to select a leaf associated with said M-trie data structure; looking up the information, wherein the looking up includes performing the action; and routing said data packet at one or more output interfaces on said router or said switch.	and Figure-9; Exhibit 1, pages 16-21, Sections 3.2.1, 3.2.2.1 – 3.2.2.12; Exhibit 1, page 16-18, Section 3.2.1 and Table-1; Exhibit 1, page 13, Section 3.1.4; page 26, Table-5.
29. A method for routing or switching data packets, comprising the computer-implemented steps of: storing in memory an M-trie data structure, said data structure organized as a multi-level tree having a set of nodes, including a root node, inferior nodes and terminal nodes, wherein each node includes an address and an opcode; receiving a data packet at an input interface on a router or switch, wherein the data packet includes information in at least a header with at least a field that is used by said M-trie data structure to indicate an action for a router to perform in order to select a leaf associated with said M-trie data structure; and looking up the information, wherein the looking up includes performing the action~~; and~~ ~~routing said data packet at one or more output interfaces on said router or said switch~~.	**At least in:** Declaration, ¶6; Exhibit 1, page 15, Figure-11; Declaration, ¶6; Exhibit 1, page 16, Section 3.2.1, Figure-12; Declaration, ¶6; Exhibit 1, page 12, Section 3.1.1; Exhibit 1, page 12, Section 3.1.2 and Figure-9; Exhibit 1, pages 16-21, Sections 3.2.1, 3.2.2.1 – 3.2.2.12; Page 1, Section 1.1 and Figure-1; page 3, Figure 2 (packet filtering router); Exhibit 1, page 16-18, Section 3.2.1 and Table-1.
30. A memory storing a program for performing a method for routing or switching data packets, comprising: storing in memory an M-trie data structure, said data structure organized as a multi-level tree having a set of nodes, including a root node, inferior nodes and terminal nodes, wherein each node includes an address and an opcode; receiving a data packet at an input interface on a router or switch, wherein the data packet includes information in at least a header with at least a field that is used by said M-trie data structure to indicate an action for a router to perform in order to select a leaf associated with said M-trie data structure; looking up the information, wherein the looking up	**At least in**: Declaration, ¶6; Exhibit 1, page 15, Figure-11; Declaration, ¶6; Exhibit 1, page 16, Section 3.2.1, Figure-12; Declaration, ¶6; Exhibit 1, page 12, Section 3.1.1; Exhibit 1, page 12, Section 3.1.2 and Figure-9; Exhibit 1, pages 16-21, Sections 3.2.1, 3.2.2.1 – 3.2.2.12; Exhibit 1, page 16-18, Section

includes performing the action; and routing said data packet at one or more output interfaces on said router or said switch.	3.2.1 and Table-1; Exhibit 1, page 1, Section 1.1 and Figure-1; page 13, Section 3.1.4; page 26, Table-5.
32. A memory as in claim 30, wherein said address includes an address of a node in said M-trie data structure that is to be traversed.	**At least in:** Exhibit 1, page 13, Section 3.1.4; page 16, Section 3.2.1; page 17, Table-1.
33. A memory as in claim 30, wherein said M-trie data structure includes a set of access control parameters.	**At least in:** Exhibit 1, page 12, Section 3.1.1 ("The Mtrie+ includes instructions which refer to operations that demux on protocol fields,... ."); Section 3.1.2 (describes support for QoS); Figure-9 (describes the protocol fields which includes ToS).
34. A memory as in claim 30, wherein said M-trie data structure includes a set of Quality of Service (QoS) parameters.	**At least in:** Exhibit 1, page 12, Section 3.1.1 ("The Mtrie+ includes instructions which refer to operations that demux on protocol fields,... ."); Section 3.1.2 (describes support for QoS).
35. A memory as in claim 30, wherein said expanded M-trie data structure includes a set of Class of Service (CoS) parameters.	**At least in:** Exhibit 1, page 12, Section 3.1.1 ("The Mtrie+ includes instructions which refer to operations that demux on protocol fields,... ."); Section 3.1.2 (describes support for QoS); Figure-9 (describes the protocol fields which includes ToS).
36. A memory as in claim 30 wherein at least one of the root node, inferior nodes, or the terminal node includes an opcode for demultiplexing, an opcode for matching, and an opcode for hashing.	**At least in:** Exhibit 1, Section 3.2.1 at page 18 (nodes with opcodes for multiplexing, matching, and hashing).
37. A memory as in claim 36 wherein said opcode for demultiplexing includes instructions to demultiplex into branches of the M-trie data structure based on contents of a byte of said packet header.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 18, Sections 3.2.2.1 - 3.2.2.2; page 19, Section 3.2.2.7; page 20, Section 3.2.2.10.
38. A method as in claim 36, wherein said opcode for matching includes instructions to compare the contents	**At least in:** Exhibit 1, Section 3.2.1 at page 18;

of a given byte of a flow label to given node data.	page 19, Sections 3.2.2.3 - 3.2.2.4; page 20, Sections 3.2.2.8 – 3.2.2.9.
39. A method as in claim 36, wherein said opcode for hashing includes instructions to hash into different branches the M-trie data structure based on the contents of a given set of bytes in said packet header.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 19, Sections 3.2.2.5 - 3.2.2.6.
40. A method as recited in Claim 16, further comprising routing said data packet at one or more output interfaces on said router or said switch.	**At least in:** Exhibit 1, page 1, Section 1.1 and Figure-1; page 13, Section 3.1.4; page 26, Table-5.
41. A method as recited in Claim 16, further comprising determining, based on one or more Access Control List (ACL) criteria stored in said expanded M-trie data structure, whether to drop or forward said data packet.	**At least in:** Exhibit 1, page 13, Section 3.1.4; page 15, Figure-11; page 29, Section 4.3.3.4.
42. A method as recited in Claim 41, wherein determining whether to drop or forward said data packet comprises matching said information in the header of said data packet to the one or more ACL criteria stored in said expanded M-trie data structure.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 19, Sections 3.2.2.3 - 3.2.2.4; page 20, Sections 3.2.2.8 – 3.2.2.9.
43. A method as recited in Claim 41, wherein said one or more ACL criteria include at least one of a source address, destination address, and upper-layer protocol information.	**At least in:** Exhibit 1, pages 16-18, Section 3.2.1 and Table-1.
44. A method as recited in Claim 41, wherein said one or more ACL criteria are stored in a sub-tree of said expanded M-trie data structure.	**At least in:** Exhibit 1, pages 13-15, Section 3.1.4 and Figure-11.
45. A method as recited in Claim 29, further comprising routing said data packet at one or more output interfaces on said router or said switch.	**At least in:** Exhibit 1, page 1, Section 1.1 and Figure-1; page 13, Section 3.1.4; page 26, Table-5.
46. A method as recited in Claim 29, further comprising determining, based on one or more Access Control List (ACL) criteria stored in said M-trie data structure, whether to drop or forward said data packet.	**At least in:** Exhibit 1, page 13, Section 3.1.4; page 15, Figure-11; page 29, Section 4.3.3.4.
47. A method as recited in Claim 46, wherein determining whether to drop or forward said data packet comprises matching said information to the one or more ACL criteria stored in said M-trie data structure.	**At least in:** Exhibit 1, Section 3.2.1 at page 18; page 19, Sections 3.2.2.3 - 3.2.2.4; page 20, Sections 3.2.2.8 – 3.2.2.9.
48. A method as recited in Claim 46, wherein said one or more ACL criteria include at least one of a source address, a destination address, and upper-layer protocol information.	**At least in:** Exhibit 1, pages 16-18, Section 3.2.1 and Table-1.
49. A method as recited in Claim 46, wherein said one	**At least in:**

or more ACL criteria are stored in a sub-tree of said M-trie data structure.	Exhibit 1, pages 13-15, Section 3.1.4 and Figure-11.

Thus, the declaration and corroborating technical document provide a showing of facts that are of sufficient character and weight as to establish reduction to practice of the claimed invention prior to the effective filing date of the DURET reference.

The existence of a working version of the claimed invention constitutes an actual reduction to practice of the invention. *See UMC Elec. Co. v. United States*, 816 F.2d 647, 651 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1025 (1988). Thus, because the inventor actually reduced the invention to practice[1] before the effective date of DURET, the Office must remove DURET as a reference.

Applicants respectfully request removal of DURET as a reference, and reconsideration and withdrawal of the rejections that rely on DURET.

B. REJECTION OF CLAIMS 16, 28, 29, AND 30

The Office Action relies on DURET as the primary reference to support the rejection of Claims 16, 28, 29, and 30 under 35 U.S.C § 103(a). However, as shown above, DURET must be removed as a reference. Furthermore, the Office Action does not assert, and there is no basis to contend that VARGHESE on its own describes each and every element of Claims 16, 28, 29, and 30. Without DURET as a reference, the rejection of claims 16, 28, 29, and 30 is unsupported. For this reason, independent Claims 16, 28, 29, and 30 are patentable under

[1] Professor Cheriton refers to conception in his Declaration for completeness. However, Applicant is not submitting the Declaration to prove up conception coupled with diligence, and is not required to, because an actual reduction to practice occurred long prior to January 28, 2000. To antedate a reference, an Applicant may elect to prove up either (1) an actual reduction to practice before the effective date of the reference, or (2) conception before the effective date of the reference, coupled with diligence from a point just prior to the effective date of the reference until the applicant's filing date or until an actual reduction to practice that is after the application filing date. MPEP § 715.07(III). For present purposes, Applicant elects to prove up (1) and not (2).

35 U.S.C. § 103(a) over DURET in view of VARGHESE. Reconsideration and withdrawal of the rejection is respectfully requested.

C. REJECTIONS OF CLAIMS 18-26 AND 32-39

Claims 18-26 and 32-39 depend from Claim 16, and 30, respectively, and thus include each and every feature of their associated independent claims. Therefore, Claims 18-26 and 32-39 are allowable for at least the reasons given above with respect to Claims 16 and 30. In addition, each of Claims 18-26 and 32-39 introduces one or more additional elements that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those limitations is not included at this time. Removal of DURET as a reference against the independent claims necessarily means that the rejection of claims 18-26 and 32-39 is unsupported. Thus, Claims 18-26 and 32-39 are allowable for the reasons given above with respect to Claims 16 and 30.

IV. CONCLUSION

The Applicant believes that all issues raised in the Office Action have been addressed. Further, for the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

To the extent necessary to make this reply timely filed, the Applicant petitions for an extension of time under 37 C.F.R. § 1.136.

If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,
HICKMAN PALERMO TRUONG & BECKER LLP

Date: February 25, 2005

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

on February 25, 2005 by Teresa Austin